

1 What is claimed is:

- 2 1. A method for concurrently processing digital video frames and high resolution  
3 still images in burst mode, comprising:  
4 acquiring regular size video frames and high resolution still image frames in burst  
5 mode from one or more image sensors;  
6 downsampling the regular size video frames into reduced size video frames,  
7 wherein the reduced size frames have frame sizes smaller than the regular size video  
8 frames;  
9 processing the high resolution still image frames acquired during the burst mode  
10 using a high resolution still image pipeline; and  
11 processing the reduced size video frames using a video pipeline, wherein the high  
12 resolution still image frames are processed concurrently with the reduced size video  
13 frames.
- 14 2. The method of claim 1, further comprising upsampling the reduced size video  
15 frames using motion estimation and information from the high resolution still image  
16 frames.
- 17 3. The method of claim 2, further comprising downsampling the high resolution still  
18 image frames, wherein the downsampled still image frames have same frame sizes as the  
19 upsampled video frames, and wherein blocks in the downsampled still image frames form  
20 a block pool.
- 21 4. The method of claim 3, further comprising:  
22 comparing blocks in the block pool with corresponding blocks in the upsampled  
23 video frames until a best match block is found; and  
24 copying the best match block into the corresponding blocks in the upsampled  
25 video frames.
- 26 5. The method of claim 1, wherein the processing the reduced size video frames step  
27 includes encoding the reduced size video frames into a standard format by a video  
28 transcoding agent.
- 29 6. The method of claim 1, wherein the processing the high resolution still image  
30 frames step includes processing the high resolution still image frames in real time.
- 31 7. The method of claim 1, wherein the processing the high resolution still image  
32 frames step comprises:  
33 downsampling and demosaicing the high resolution still image frames using  
34 complex demosaicing algorithms; and

- 1 color correcting the high resolution still image frames using complex color  
2 correction algorithms.
- 3 8. The method of claim 1, further comprising compressing the reduced size video  
4 frames and the high resolution still image frames.
- 5 9. A joint video and still image pipeline for a video camera system, comprising:  
6 one or more image sensors capable of concurrently acquiring regular size video  
7 frames and high resolution still image frames in burst mode, wherein the regular size  
8 video frames are downsampled into reduced size video frames;  
9 a sensor controller capable of storing the regular size video frames and the high  
10 resolution still image frames acquired during the burst mode into a memory; and  
11 one or more processors capable of concurrently processing the reduced size video  
12 frames and the high resolution still image frames acquired during the burst mode, wherein  
13 the reduced size video frames are processed using a video pipeline, and the high  
14 resolution still image frames are processed using a high resolution still image pipeline,  
15 and wherein the high resolution still image frames are processed concurrently with the  
16 reduced size video frames.
- 17 10. The joint video and still image pipeline of claim 9, wherein the reduced size video  
18 frames are upsampled using motion estimation and information from the high resolution  
19 still image frames.
- 20 11. The joint video and still image pipeline of claim 10, wherein the high resolution  
21 still image frames are downsampled to have the same frame sizes as the upsampled video  
22 frames, and wherein blocks in the downsampled still image frames form a block pool.
- 23 12. The joint video and still image pipeline of claim 11, wherein blocks in the block  
24 pool are compared with corresponding blocks in the upsampled video frames until a best  
25 match block is found, and wherein the best match block is copied into the corresponding  
26 blocks in the upsampled video frames.
- 27 13. The joint video and still image pipeline of claim 9, further comprising a video  
28 transcoding agent capable of encoding the reduced size video frames into a standard  
29 format.
- 30 14. The joint video and still image pipeline of claim 9, wherein the high resolution  
31 still image frames are processed in real time.
- 32 15. The joint video and still image pipeline of claim 9, wherein the processors are  
33 selected from a microprocessor, an application specific integrated circuit (ASIC), and a  
34 digital signal processor.

- 1 16. The joint video and still image pipeline of claim 9, wherein the processors  
2 downsample, demosaic, and color correct the high resolution still image frames using  
3 complex algorithms.
- 4 17. A computer readable medium providing instructions for concurrently processing  
5 digital video frames and high resolution still images in burst mode, the instructions  
6 comprising:  
7 acquiring regular size video frames and high resolution still image frames in burst  
8 mode from one or more image sensors;  
9 downsampling the regular size video frames into reduced size video frames,  
10 wherein the reduced size frames have frame sizes smaller than the regular size video  
11 frames;  
12 processing the high resolution still image frames acquired during the burst mode  
13 using a high resolution still image pipeline; and  
14 processing the reduced size video frames using a video pipeline, wherein the high  
15 resolution still image frames are processed concurrently with the reduced size video  
16 frames.
- 17 18. The computer readable medium of claim 17, further comprising instructions for  
18 upsampling the reduced size video frames using motion estimation and information from  
19 the high resolution still image frames.
- 20 19. The computer readable medium of claim 18, further comprising instructions for  
21 downsampling the high resolution still image frames, wherein the downsampled still  
22 image frames have same frame sizes as the upsampled video frames, and wherein blocks  
23 in the downsampled still image frames form a block pool.
- 24 20. The computer readable medium of claim 19, further comprising:  
25 comparing blocks in the block pool with corresponding blocks in the upsampled  
26 video frames until a best match block is found; and  
27 copying the best match block into the corresponding blocks in the upsampled  
28 video frames.